ATTACHMENT C

Example SIP Section 1.4 Maximum Daily Effluent Limitations (MDEL's) and Average Monthly Effluent Limitations (AMEL's) for Total Recoverable Copper using CTR Water Quality Hardness-Dependent Values and Basin Plan Site-Specific Objectives for the CCC (Criterion Continuous Concentration) and CTR Values for the CMC (Criterion Maximum Concentration) for the Protection of Freshwater Aquatic Life

Where

Effluent Concentration Allowance (ECA) = total recoverable copper criterion (No Dilution Credit)

*The **MDEL** and **AMEL** for total recoverable copper discharged to the American River shall be calculated using the Coefficient of Variation (CV) and the multipliers in Tables 1 and 2 of the SIP as shown below:*

WATER QUALITY–BASED MDEL and AMEL – American River Discharge	
Copper (Total Recoverable)	
ECA acute	CMC @ Observed Effluent Hardness as $CaCO_3$
ECA chronic	CCC @ Observed Effluent Hardness as $CaCO_3$
Coefficient of Variation (Default)	0.6
LTA (lowest)	Lowest of: (ECA acute ∗ Table 1 Acute Multiplier) or (ECA chronic ∗ Table 1 Chronic Multiplier)
Sampling Frequency (n)	≤ 4
MDEL	(LTA(lowest) ∗ Table 2 MDEL Multiplier)
AMEL	(LTA(lowest) ∗ Table 2 AMEL Multiplier)

*Examples of calculated **MDEL's** and **AMEL's** for total recoverable copper based upon a range of effluent hardness values are shown below:*

Copper expressed as total recoverable, µg/l, Using Coefficient of Variation (CV) of 0.6						
Receiving Water Hardness (mg/L as $CaCO_3$)	ECAc = CCC[1] 4-Day Avg (µg/L)	ECAa =CMC[2] 1-hr Avg (µg/L)	LTA[3] (chronic) (µg/L)	LTA[4] (acute) (µg/L)	**AMEL**[5] (µg/L)	**MDEL**[6] (µg/L)
<20	Must calculate	Must calculate	Must calculate	Must calculate	Must calculate	
20	2.36	3.07	1.24	0.986	1.53	3.07
25	2.85	3.79	1.50	1.22	1.89	3.79
30	3.33	4.50	1.76	1.44	2.24	4.49
35	3.80	5.21	2.00	1.67	2.59	5.20
40	4.26	5.90	2.25	1.90	2.94	5.89
45	4.72	6.60	2.48	2.12	3.28	6.59
50	5.16	7.29	2.72	2.34	3.62	7.27
60	6.03	8.65	3.18	2.78	4.30	8.64
70	6.88	10.0	3.62	3.21	4.98	9.99
≥73	Must calculate	10.4	Must calculate	3.34	5.17	10.4

[1]CCC total recoverable (4-day average) = exp{0.8545[ln(hardness)] – 1.702}
[2]CMC total recoverable (1-hour average) where hardness < 73 mg/L = exp{0.9422[ln(hardness)] – 1.700}
or where hardness > 73 mg/L, CMC total recoverable = 10.4 µg/L
[3]LTA_c (Long-Term Average chronic) = CCC x 0.527
[4]LTA_a (Long-Term Average acute) = CMC x 0.321
[5]AMEL (Average Monthly Effluent Limitation) = LTA (lowest) x 1.55
[6]MDEL (Maximum Daily Effluent Limitation) = LTA (lowest) x 3.11